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(19)


## (54) IMPROVED MINERAL OIL BASE VEHICLE

(71) We, E. R. SQUIBB & SONS, INC., a corporation organized and existing under the laws of the State of Delaware, United States of America, having its offices at 909 Third Avenue, New York, New York 10022, United States of America, do hereby declare the invention for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

The present invention relates to a mineral oil base vehicle for ointments, salves and medicaments.

Mineral oil vehicles prepared by dissolving in the oil a modifying (gelling) agent soluble therein at elevated temperature are described in U.S. Patents 2,627,938 and 2,628,187. The disclosures of these patents are incorporated herein by reference. A disadvantage of such vehicles is their susceptibility to syneresis or bleeding whereby mineral oil which separates from the base can cause soiling of both the carton and the label. For this reason such vehicles cannot be packaged safely in jars. Even when packaged in blind end tubes, the seepage of oil due to syneresis can occur once the tube is opened.

According to the invention there is provided a vehicle which is stabilized against syneresis comprising a gelled mineral oil base by weight of a porous powdered magnesium having incorporated therein from 0.1% to 5% silicate, which has a surface area of from 250 to 350 $m^2/g$ and a particle size of from 0.5 to 35 microns.

The invention also provides a method for preventing syneresis in a vehicle comprising a gelled mineral oil base, which comprises incorporating into the vehicle from 0.1% to 5% by weight of a porous powdered magnesium silicate, which has a surface area of from 250 to 350 $m^2/g$ and a particle size of from 0.5 to 35 microns.

The preferred magnesium silicate has the formula

$$MgO \cdot 2.5SiO_2 \cdot 1.5H_2O.$$

The magnesium silicate is employed in a quantity of from 0.1% by weight to 5% by weight depending on the ratio of mineral oil and gelling agent in the base. Preferably the amount of magnesium silicate is from 0.2% to 2.5% by weight, and most preferably from 0.25% to 1% by weight.

Suitable gelling agents are polyethylene as described in the aforementioned patents or methylpentene polymers such as TPX grade R methylpentene polymers supplied by I.C.I. (Organics) Inc.

The stabilized vehicle of the present invention may be prepared by any method which is suitable to incorporate the highly porous powdered magnesium silicate into the gelled mineral oil base vehicle whereby the magnesium silicate is incorporated into the vehicle in a substantially uniform manner. Suitable methods for carrying this out are, for example, by use of a roller mill, ball mill, mixing vessels provided with agitators, etc. A preferred method is to form a concentrate by mixing the magnesium silicate with a portion of the gelled mineral oil base, for example, about one part by weight of magnesium silicate to about ten parts by weight of gelled mineral oil base, and then to add the balance of the gelled mineral oil base. Alternatively, it is possible to incorporate the magnesium silicate into the mineral oil base before adding the gelling agent, or to add the magnesium silicate and gelling agent simultaneously to the mineral oil. In these latter methods, the magnesium silicate will be present in the oil before or during the gelling process.

The following Examples illustrate the present invention without, however, limiting the same thereto.

### Examples 1—5

A hydrocarbon gel is prepared according to Example II of U.S. Patent No. 2,627,938. Magnesium silicate having a surface area and particle size according to the invention is incorporated into the gel in three stages. A concentrate is first formed by mixing one part of magnesium silicate with ten parts of hydro-

carbon gel in a Hobart type mixer and then passed through a roller mill. When a uniform mixture is btained, the balance of the hydrocarbon gel is added and mixed in a Hobart mixer until homogeneous.

Five formulations are prepared in the foregoing manner having the following composition:

| Jar | Hydrocarbon gel (g) | Magnesium Silicate g | % |
|---|---|---|---|
| 1. | 40 | 0.1 | 0.25 |
| 2. | 40 | 0.2 | 0.5 |
| 3. | 40 | 0.4 | 1.0 |
| 4. | 40 | 0.6 | 1.5 |
| 5. | 40 | 0.8 | 2.0 |

Each formulation is placed in a 2 oz. jar and a 45° cone-shaped indentation made in the top of each jar to a depth of about one inch. After being stored overnight at 50°C, the jars are inspected. No oil accumulation is found in any of the indentations.

Examples 6—10

The procedure of Examples 1—5 is repeated with formulations having the following composition:

| Jar | Hydrocarbon gel (g) | Magnesium Silicate g | % |
|---|---|---|---|
| 6. | 100 | 0.1 | 0.1 |
| 7. | 200 | 0.1 | 0.05 |
| 8. | 400 | 0.1 | 0.025 |
| 9. | 50 | 0.1 | 0.2 |
| 10. | 50 | 0 | 0 |

After placing in jars, indenting and storing as in examples 1—5, an oil accumulation of 0.5 ml is found in control jar 10, and lesser accumulations are found in comparative jars 7 and 8. Jars 6 and 9 show no oil accumulation.

WHAT WE CLAIM IS:—

1. A vehicle which is stabilized against syneresis comprising a gelled mineral oil base having incorporated therein from 0.1% to 5% by weight of a porous powdered magnesium silicate, which has a surface area of from 250 to 350 $m^2/g$ and a particle size of from 0.5 to 35 microns.

2. A vehicle according to claim 1, wherein the magnesium silicate is present in an amount from 0.2% to 2.5% by weight.

3. A vehicle according to claim 2, wherein the magnesium silicate is present in an amount from 0.25% to 1% by weight.

4. A vehicle according to any one of claims 1 to 3, wherein the gelling agent is polyethylene or polymethylpentene.

5. A method for preventing syneresis in a vehicle comprising a gelled mineral oil base, which comprises incorporating into the vehicle from 0.1% to 5% by weight of a porous powdered magnesium silicate, which has a surface area of from 250 to 350 $m^2/g$ and a particle size of from 0.5 to 35 microns.

6. A method according to claim 5, wherein a concentrate of the magnesium silicate and some of the gelled mineral oil base is first prepared and the balance of the gelled mineral oil is added to the concentrate.

7. A method according to claim 5 or 6, wherein the gelling agent is polyethylene or polymethylpentene.

8. A method according to claim 5, substantially as hereinbefore described in any of the Examples.

9. A vehicle according to claim 1, which has been treated by a method according to claim 6 or 8.

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